UNIVERSITY OF GONDAR

COLLEGE OF MEDICINE AND HEALTH SCIENCE

INSTITUTE OF PUBLIC HEALTH

Prevalence of under nutrition and associated factors among elderly people in Gondar town, North West Ethiopia.

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ACRONYMS and abbreviations

ANRS - Amhara National Regional State

AOR- Adjusted Odds Ratio

BMI- Body Mass Index

BOFED- Bureau of Finance and Economic Development

DDS- Dietary Diversity Score

HHs - Households

K.G- Kilogram

MUAC- Mid Upper Arm Circumference

SPSS - Statistical Package for Social Science.

UHEPs- Urban Health Extension Professionals

WHO - World Health Organization.

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Abstract

Introduction: Under nutrition among elderly population is becoming significant regardless of the progress on health care system in the world in general and in developing countries in particular. Elderly people are the most neglected but the highest vulnerable for under nutrition. Therefore This study is intended to show the magnitude of the problem and associated factors among elderly people in Gondar town.

Objective: To assess prevalence of under nutrition and associated factors among old age people aged ≥ 65 years living in Gondar town, Northwest Ethiopia, 2013

Methods: A community based cross-sectional study was conducted in Gondar town and two stage cluster sampling technique was used and a total of 757 respondents were included in the analysis weight and height of respondents was measured to calculate body mass index. The collected data were entered into Epi info and analysed using SPSS version 20.0 software packages. The degree of association between independent and dependent variables was assessed using odds ratio with 95% confidence interval and the level of significance was ≤0.05. Both bivariate and multivariate logistic regressions were used to identify the associated factors.

Results: A total of 757 respondents were assessed for under nutrition status. The prevalence of under nutrition was found to be (21.9%). Multiple logistic regression analysis revealed that Unable to read and write [AOR 2.686,95%CI (1.472,5.199)],being female [AOR 2.970,95%CI (1.631,5.408)], age ≥ 85 [AOR 38.141, 95% CI (15.016, 96.880)] being poor [AOR 1.783,95% CI (1.02,3.18)], poor dietary diversity score [AOR 3.704: CI 95% (1.797,7.626)] were found to be independently associated with under nutrition of elderly.

Conclusion and recommendation: Prevalence of under nutrition among elderly is found to be high. Age, sex, educational status, dietary diversity score and wealth index were factors affecting under nutrition. Therefore, great attention should be given for this elderly age group and further researches should also be conducted.

Key words; under nutrition, elderly, body mass index

1. Introduction

1.1 Statement of the problem

Elderly people are increasing from time to time. According to WHO estimation, by 2050, for the first time in human history, the number of adults will outnumber children under the age of 14 which gives an insight the global community to reconsider the suitability of health infrastructures for the elderly people and give equal emphasis as we have for children[1].Recent data reveals that 11% of the world population and 3.2% of Ethiopian population is categorized under elderly population (≥ 65 years) [2].

Nutrition disorders appear more often with high prevalence in older age than in the young. Nearly all individuals above 65 years of age suffer from a certain degree of malnutrition which is considered as a specific characteristic of old age. When old age people are affected by malnutrition, they are more likely to contract different acute and chronic illnesses which in turn increase duration of hospital stay. The prolonged stay in the health facility consequently requires greater nursing care, specialized skill and requires more medication. All the above issues combined indirectly contribute to the cost for health expenditure associated with treating the secondary infection or diseases acquired as a result of malnutrition[3, 4].

As any other segment of the population, elderly populations have their own health and social needs to be addressed by the global community. Their status is extremely diverse ranging from fit, active and healthy to extremely feeble, dependent and seriously affected by chronic diseases[5].

Malnutrition in the aged population, which can be the cause of such chronic or acute diseases or can be due to chronic illness, is expected to be a major public health problem[6]. Study conducted in Iran verifies that older people with chronic illnesses like depression and cancer are highly malnourished as compared to those who are not affected by such chronic diseases [7]

Older people particularly in developing continents like Africa are responsible to take care of dependents and are the most vulnerable to malnutrition, hunger and chronic

diseases but highly neglected population from different health and social interventions carried out by different stake holders including aid organizations[8].

One of the contributing factor for the vulnerability of older people is the natural ageing process itself which highly affects the nutrient needs. The fact that the requirements for some nutrients decreases as the need for the other increases makes them different and demands critical evaluation and follow up. Loss of appetite, dental problems and psycho social issues are also the major contributing factors[9]

Under nutrition occurred in the elderly populations can be divided in to three distinct types. Wasting which is primarily caused by inadequate food intake and other psychosocial factors, Cachecsia which is an involuntary loss of fat free muscles (FFM) mainly caused by catabolism by raising metabolism rate and increased protein degradation. The other type is sarcopenia caused by an involuntary loss of muscles due to an intrinsic and inevitable effect of the natural ageing process[2].Micro nutrient deficiency is also very significant in the age group unlike others which needs high attention. Some studies find that Vitamin D and B12, [10] Zinc and selenium [11] are the most deficient vitamins and minerals in elderly.

According to projection made by WHO, the elderly population in Ethiopia will double by 2025 as compared to the population in 2000 likewise the public health burden of malnutrition and other non communicable diseases which are significant in the elderly people will sharply increase [12]

In Ethiopia, as to my knowledge, many researches are not yet conducted regarding the magnitude of elderly under nutrition except some Non Governmental Organizations conducted survey in the drought prone and epidemic affected areas to use it as a base line data before proceeding to intervene. This data show that 54 % of elderly people are malnourished using Body Mass Index (BMI) and this figure reaches 64% using Mid Upper Arm Circumference (MUAC). There is an underlying respect for older people in Ethiopia where family and community support systems are

relatively strong. However, a significant number of older people have no family and community support, mainly due to the death of relatives or separation caused by famine, war, disease and displacement and the weakening of family and community support structures[13].Therefore this study aims to show the magnitude of under nutrition in the elderly and factors associated with it.

1.2 Literature Review

1.2.1 Prevalence of under nutrition

Prevalence of Malnutrition greatly varies in different settings; Hospital (39%), Nursing Home (14%), Community (6%) and Rehabilitation centre (50 %) [14] .A Study in Iran also shows prevalence of malnutrition was high in chronically depressed patients (14.5%) while compared with among overall prevalence (10.6 %).More over the elderly people who are in drug supplement are more malnourished than those who were not [7]

According to nestle nutrition institute, globally the prevalence of under nutrition is increasing and reaches 22.6%. But in Europe, the prevalence of under nutrition in the community setting was 15% and reasonably high in hospitalized elderly[15]. The prevalence of under nutrition in USA is lower (5.8%) as compared to Europe[16].

In Asia, the magnitude of under nutrition is higher than USA and lower than Europe. According to the cross sectional study done in Iran the prevalence is 12 %[17].

Sub Saharan Africa like other part of developing countries is suffering with high burden of diseases among the elderly in general and malnutrition in particular. The overall prevalence of under nutrition among old age people in sub-Saharan Africa is reported to be between 6% in Cameroon and 48 % in Ghana [18]. But study done in the lake Victoria basin of east Africa showed the prevalence of under nutrition is 26.4%[19].

In Ethiopia though more researches are not done yet in this age group a nutritional survey done in Borena Zone oromia region in 2000, estimate a prevalence of 54 %

malnutrition. In spite of these high rate of vulnerability elderly people are neglected in all nutritional interventions conducted in the country [13]

1.2.2 Factors affecting Nutritional status of elderly

Among socio demographic factors age and sex are the most frequently stated factors affecting the nutritional status of elderly population. In a study done in Malaysia sex is significantly associated with under nutrition. Women are more vulnerable to malnutrition as compared to men [20] but study done in Kenya showed that prevalence of under nutrition is higher in elderly males than females[21]. Study done In Dutch revealed that under nutrition increase with age in the elderly population [22].

Under nutrition is higher in Sick elderly patients than healthy one. Study done in Lebanese identified that 61.6% of elderly people are suffering from at least one cardiovascular diseases such as hypertension and no elderly has the habit of doing physical exercise [23] likewise study conducted In Norway and Chad contradicts the above findings by revealing health related quality of life negatively affects the risk and prevalence of malnutrition [14, 24]

The meal timings and fasting practices of both elderly males and females have no significant association with under nutrition but meals consumed with family, foods cooked at home/received from home and macronutrient intake in elderly males, were found to have association with under nutrition. Whereas negative relationship existed between skipping of meals and fat intake for under nutrition[25]

Percentage and risk of under nutrition were higher in people living alone than those living with others according to study in Iran (7) but population survey in Chad shows that living alone is not the risk factor for malnutrition [14]

Nutrition survey done in Kenya states that 30.5% of elderly population have three or more meals per day and respondents with low dietary diversity (eating less than three different food items per day) are more likely to be malnourished by BMI as compared to those who eat three or More different food items per day[26]. According

to study in Russia under nutrition is highly associated with wealth which suggested that wealthier elderly are less likely to be undernourished than those who are poor [27].

Study done in Sweden verified that the contributing factors for elderly under nutrition are multiple and complex by nature. Among these, loss of appetite is the major and probably the original factor to which leads elderly to malnutrition. Chewing and swallowing problems as well as illness and feelings of depression were occurred more often in those at risk of malnutrition as compared to the well nourished [28].

Taste, smell, site and texture are essential components of food enjoyment. People whose senses of smell and taste were diminished tend to experience fewer food carvings and show less motivation to involve even for their favourite food they really want to eat. One study done in this issue in Europe confirms that > 60 % of elderly people aged between 65 and 80 and >80% of participants whose age ≥ 80 years had impaired taste and smell compared with those people whose age is ≤ 60 [29].

Elderly people with restricted mobility**,** who could not leave their house without support, were more likely to suffer from under nourishment than their mobile neighbours of the same age. Being immobile affects physical and mental health condition and also results in a dependence on others for support, affecting food choices and eating habits[30].

Those elderly who perceived their health and nutrition condition as poor or very poor suffered a greater chance of being undernourished than those who considered their health moderate or good. Poor health can cause malnutrition because of biological impacts, decreased appetite and medication usage [30].

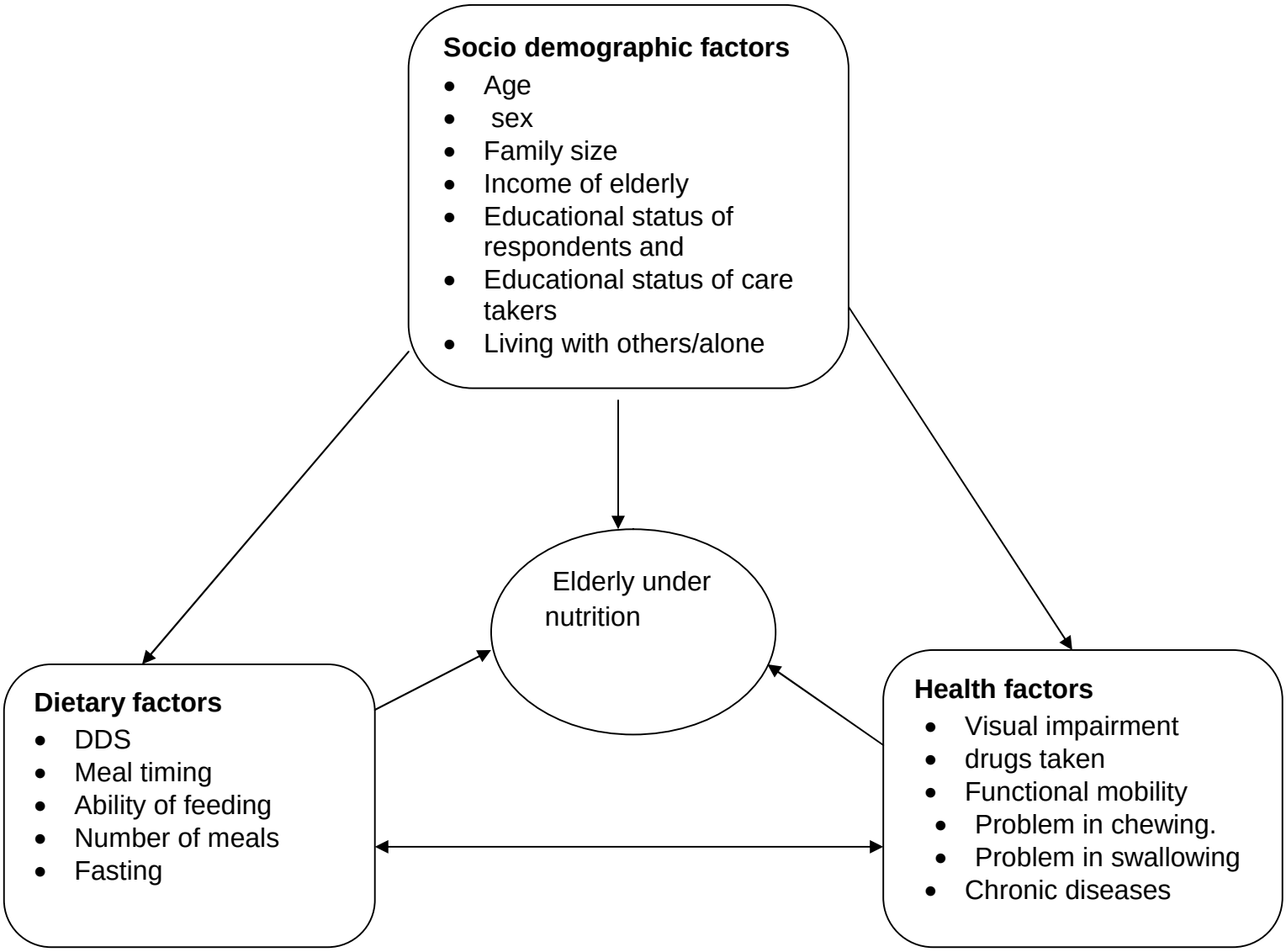

Figure 2: conceptual frame work

1.3. Justification of the study

Most studies regarding malnutrition are focusing in children than old ages .As far as malnutrition is concerned, elderly population are highly vulnerable but are neglected. The increasing number of elderly people with less effort to combat their health and nutritional needs seek great attention as the case is becoming one of the public health problems.

In Ethiopia, There is a survey done in emergency areas of Oromia and Somalia region. But as far as my knowledge is concerned limited studies are done in the stable population of Ethiopia in general and in my study area in particular.

Therefore, the study would help to assess the prevalence of elderly under nutrition in the stable population and can be a base line data for other studies. It would also serve to identify the factors contributing to under nutrition in this neglected age group and helps to show the way forward and may also serve as an important tool for any possible interventions aimed at improving old age under nutrition.

2. OBJECTIVES

2.1. GENERAL OBJECTIVE

- To assess prevalence of under nutrition and associated factors among elderly people aged ≥ 65 years living in Gondar town, Northwest Ethiopia, 2013.

2.2. SPECIFIC OBJECTIVES

- To assess the prevalence of under nutrition on elderly people ≥65 years
- To identify factors associated with under nutrition on elderly people aged ≥ 65 years

3. METHODS

3.1. Study design

A community based quantitative cross-sectional study was deployed.

3.2. Study Area and Period

The study was conducted in Gondar town, which is the capital of North Gondar Zone, Amhara National Regional State. The town is located 727 km away from Addis Ababa, the capital of Ethiopia and 180 km from Bahirdar. From Amhara regional state BOFED 2013 population projection the town has a population of 258,178 of which 122,072 are males and 136,107 are females. The population of old age people (≥ 65 years) is 9,289 (3.6 %) of the total population [31]. The town comprises 24 kebeles (13 urban and 11 rural).Regarding health institutions, the town has 8 health centres and 2 hospitals. The governmental health service coverage is reached to 85 %. Concerning human resource for health, the town has 14 health officers, 8 environmental health officers, 74 nurses, 20 pharmacy technicians and pharmacists, 17 laboratory technicians and technologist, 54 urban health extension professionals and 27 HEWs [32]. The study was conducted from July to October, 2013

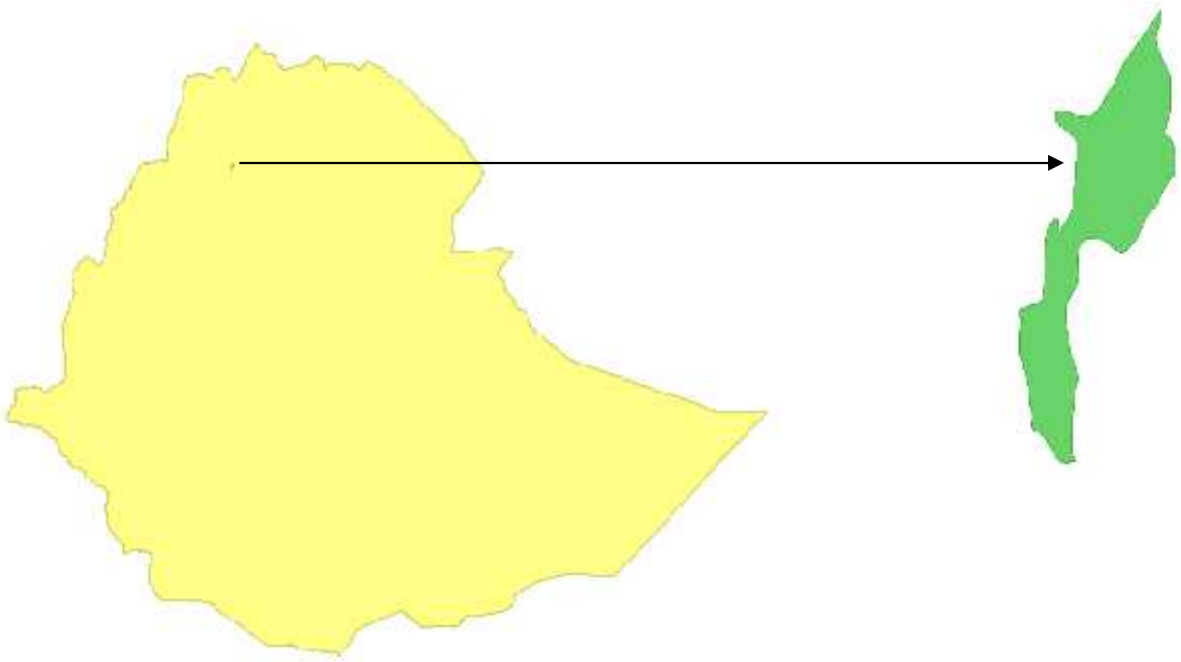

Figure 2. Map of Gondar town

3.3. Source Population

All old people who aged ≥ 65 years who are living in Gondar town were taken as the source population.

3.4. Study Population

The study population were all elderly people who are living in the selected clusters of 5 kebeles of the town which are randomly selected.

Inclusion and Exclusion criteria

Inclusion criteria: old age people aged ≥ 65 years were included.

Exclusion Criteria: - Respondent who cannot hear, amputated two legs, With visible oedema in any part of the body and seriously ill People were excluded from the study.

3.5. Sample Size and Sampling techniques

Sample size:

The sample size was determined by using a single population proportion formula considering the following assumptions of old age malnutrition 26.4% [19] ,95%CI, level of significance to be 5%, Z *α/2* = 1.96, and absolute precision or margin of error to be 5%.

$$n = \frac{(Z\alpha/2)^2 P(1-P)}{d^2} = \frac{(1.96)^2 0.264(1-0.264)}{0.05^2}$$

$$n = 299$$

Where

- Design effect = 2
- For non response = 10%

Total sample size = **657**

Therefore, based on the above sample size determination **657** individuals was the final sample size.

Sampling techniques:

Two stage cluster sampling technique was used to address the study subjects. Simple random sampling technique was undertaken to select kebeles. According to 2013 projected population for the town, on average there are 503 elderly people in each kebele and there are about 9 ketenas in each kebele which makes 56 elderly people will be found in each 'ketena'. Five kebeles were included in the study and 3 ketenas in each kebele were also selected by simple random sampling and all elderly people found in the selected ketena (cluster) were considered as study subjects.

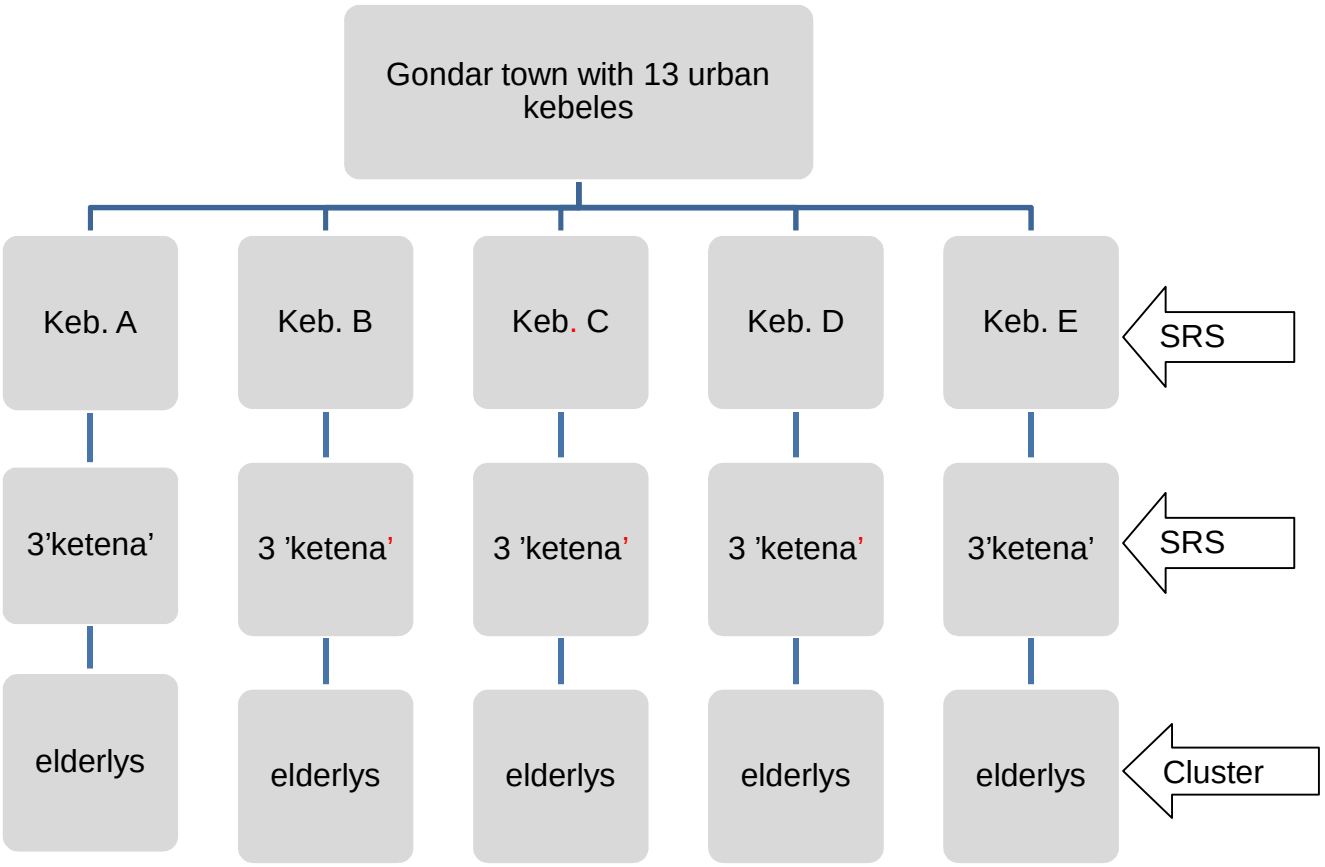

Figure 3. Schematic presentation of sampling procedure

3.6. Variables of the study

- **Dependent variables**

  Under nutrition

- **Independent variables**

Socio-demographic characteristics – age, sex, family size, wealth index of respondents, educational status of respondents or care takers, marital status

Health factors– drug intake, functional mobility, Problems in eating, swallowing and digestion, chronic diseases

Dietary factors – Dietary diversity score, Number of meal per day, Fasting, ability of feeding

3.7. Operational definitions

Number of meals: - actual number of meals consumed from morning till bed time.

Meal Timing: - the schedule of consumption of meals regularity.

Functional mobility: - is the ability to move to perform basic activities of daily life without support

Old Age: - People whose age is 65 years and above

Normal:-BMI 18.5-24.99

Undernourished:-BMI<18.5

Low DDS: - Respondents eat < 3 food items per day

Middle DDS: - Respondents eat 4-5 food items per day

High DDS: - Respondents eat> 5 food items per day

3.8. Data collection tools and procedures

Data was collected by interviewing old aged people using a structured questionnaire. The questionnaire first prepared in English and then translated into Amharic and back translated into English by language experts to check consistency and conceptual equivalence. The Amharic version questionnaire was pre tested before actual data collection in an area not included in the research. Ten urban health extension professionals who are working in kebeles other than the selected kebeles were used as data collectors and 3 nurse supervisors were selected from Gondar town health office and training was given for 3 days on data collection techniques by the principal investigator. Anthropometric measurements were taken using standard techniques. Height was measured using portable height meter. Participant were barefoot, legs straight, shoulders relaxed and to look straight ahead at the horizontal plane. Participants were also asked to inhale deeply, hold the breath and maintain an erect position just before taking the measurement. Reading of height measurement was taken twice to the nearest 0.1 cm. But for those people with kyphosis and unable to measure their height arm span was used instead [33, 34] . The weight was measured with a portable digital weight scale. Participants were informed to wear minimum clothing and stand still in the middle of the scale's platform. Reading of weight was also be taken twice to the nearest 0.5 kg.

3.9. Data Processing and Analysis

All the questionnaires were checked visually, coded and entered into Epi info version 3.5.1 and transported to SPSS version 20 statistical software package for analysis. The result was presented in the form of tables, figures and text using frequencies and summary statistics such as mean, standard deviation and percentage to describe the study population in relation to relevant variables. Binary logistic regression was conducted and variables with P value ≤ 0.2 were included in the multivariate analsis and the degree of association between independent and dependent variables was assessed using odds ratio with 95% confidence interval and p-value 0.05.

3.10. Data Quality control

The quality of data were assured by properly designing and pre-testing of the questionnaires in Bahirdar town in 42 respondents, and by providing training for the data collectors and supervisors before the actual data collection on the elements of the questionnaire and measurement skills. Every day after data collection, questionnaires were reviewed and checked for completeness by the supervisors and principal investigator.

3.11. Ethical consideration

Ethical clearance was obtained from the Institutional Review Board (IRB) of the University of Gondar, College of medicine and health sciences, Institute of Public Health. Formal letter of cooperation was written for Gondar town Health Office. Consent of town health office and respective kebeles was also obtained.

Informed consent was obtained from each study subject. Respondents were also informed about the objective of the study which contributed necessary information for policy makers and other concerned bodies. Any involvement in the study was done after their complete consent is obtained. They were also informed that all data obtained from them would be kept confidential by using codes instead of any personal identifiers and is meant only for the purpose of the study. Finally after collection of the necessary data, those people with malnutrition were advised on the appropriate dietary intake.

4. Results

4.1Socio demographic characteristics

A total of 657 elderly people were planned to Participate in the study .But the actual sample included in the analysis was 757.

The majority of the respondents 563 (74.4%) were females and the remaining 196 (25.6%) are males. The median age of the respondent was 71.4 . Young old, middle old and oldest old people constitute 73.2%, 21.5%and 5.3% of the sample respectively.

The majority of respondents 556 (73.4%) were followers of orthodox Christianity followed by Muslims.

Regarding marital status 467 (61.7%) were widowed and 236 (31.2%) were married.

A higher proportion of respondents 439 (58%) cannot read and write.

The wealth index result showed that 294 (38.8%) of respondents were poor, 218 (28.8%) were middle and 245 (32.4%) were rich. The mean family size of respondents was 4.05.(Table 1)

(Table 1) Socio demographic characteristics of prevalence of under nutrition among elderly people in Gondar town, 2013.

Socio-demographic characteristics	Frequency	Percent
Age group		
65-74	554	73.2
75-84	163	21.5
≥85 years	40	5.3
Family size		
<4	485	64.2
≥4	272	35.8
Marital status		
Widowed	467	61.7
Married	236	31.2
Single/Divorced/separate	54	7.1
Educational status of respondents		
Unable to read and write	440	58
Read and write	244	32.2
Primary education	51	6.7
Secondary and above	22	2.9
Educational status of partner (n=236)		
Unable to read and write	132	56
Read and write	69	29.2
Primary education	23	9.3
Secondary & above	13	5.5
Occupation of care taker (n=272)		
Government employee	122	44.8
Farmer	3	14.3
Merchant	108	39.7
Others*	39	1.1
With whom respondents are living		
With partner	236	31.2
With children	446	58.9
Alone	65	8.6
Others**	13	1.7
Wealth index		
Poor	294	38.8
Middle income	218	28.8
Rich	245	32.4

4.2 Prevalence of under nutrition

The prevalence of under nutrition was found to be (21.9%).The prevalence varies in sex (25 % in females and 14.8 in males). The mean BMI was 20.6 (SD ± 2.4). From the total under nourished elderly 84.5% are females. Prevalence of under nutrition in those middle old age groups was (55.2%) and 75% in oldest old age groups.

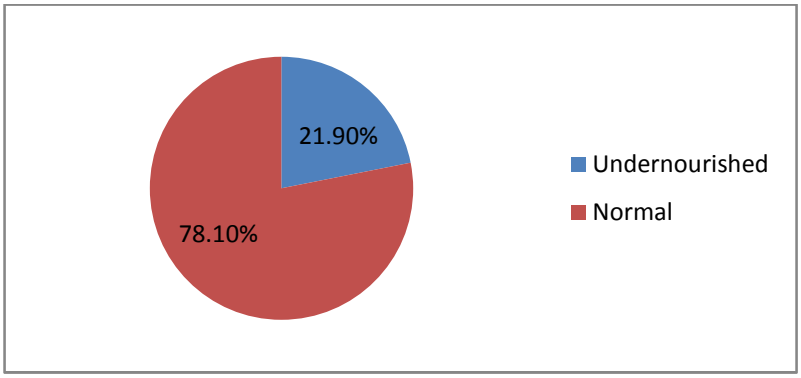

Figure 3. Prevalence of under nutrition among elderly people in Gondar town, 2013

Regarding to the health status of respondents, 285 (37.6%) were sick in the last three months of which 70% of them visited health facility to seek medication. From those who were sick, 67% of elderly were taking medication at the time of data collection. The most commonly mentioned diseases for taking medication mentioned by the respondents were Joint pain, hypertension, and diabetic mellitus. From the total respondents, 163 (21.5%) of elderly have been suffering from decline of food intake. Digestive system problem and chewing problem being the main reason for loss of appetite.

The dietary diversity score result showed that 51 (6.6%), 273 (36.1%) and 433 (57.2%) have low, middle and high dietary diversity score respectively. The median dietary diversity score is 2. The average number of daily meals taken by the respondent is 2.9 (SD±0.468). Regarding the meal timing, 566 (74.8%) of respondents were irregular meal timing. Considering the feeding ability, 497 (65.7%) can self fed without any difficulty, 234 (30.9%) can self fed with difficulty and 26 (3.3%) of respondents cannot feed by themselves. With regard to food intake, 163 (21.5%) of respondents were suffering from loss of appetite.

Table 2: Characteristics of respondents with respect to factors associated with under nutrition of elderly, 2013

Variable	Frequency	Percent
Illness for the last 3 months		
Yes	285	37.6
No	472	62.4
Visit health facility (n=285)		
Yes	199	70
No	86	30
Taking medication (n=285)		
Yes	191	67
No	94	33
Most common diseases mentioned (n=285)		
Joint pain	83	29
Hypertension	72	25.3
Diabetic mellitus	39	13.7
Hearing problem	31	10.9
Indigestion problem	27	9.5
Visual problem	24	8.4
I don't know	9	3.1
Decline food intake		
Yes	163	21.5
No	594	78.5
Reasons for declined food intake (n=163)		
Digestive system problem	74	45.4
Loss of appetite	35	21.4
Chewing problem	39	23.9
Swallowing problem	15	9.2
Dietary diversity score		
Low	51	6.6
Middle	273	36.1
High	433	57.2
Meal timing		
Regular	566	74.8
Irregular	191	25.2

4.3 Factors affecting nutritional status of elderly

Age, sex, wealth index, dietary diversity score, sometimes feeding with family members and sometimes alone, Feeding ability, time of fasting, Being sick for the last 3 months, taking medication and functional mobility had shown a significant association with under nutrition in the bivariate analysis at p≤0.05. After adjusting for other confounders, in the multivariate analysis age, sex, educational status, wealth index and dietary diversity score of respondents became significant predictors of under nutrition. Females were 3 times times more likely to be undernourished as compared to males [AOR 2.970,95%CI (1.631,5.408)]. Respondents who cannot read and write were 2.7 times more likely to be undernourished [AOR 2.686,95%CI (1.472,5.199)]. Regarding wealth index middle income elderly were 2.546 more likely to be undernourished as compared to rich [AOR 2.546,95% CI (1.371,4.850)]and Poor are 1.783 times more likely to be undernourished [AOR 1.783,95% CI (1.00,3.18)] . More over as age increases the probability to be undernourished increases. Elderly whose age is ≥ 85 are 38.1[AOR 38.141, 95% CI (15.016, 96.880)] times more likely to be undernourished as compared to those people who are between the age of 65-74.

Elderly people with poor dietary diversity score is 3.702 times more likely to be undernourished when compared to those with high diversity score [AOR 3.704: CI 95% (1.797,7.626)]

Being sick for the last 3 months, taking medication, functional mobility were significant to under nutrition in the bivariate analysis at a p value of ≤0.05 significant level. After adjusting for confounder variables in the multivariate analysis, none of the variables were found significant.

Table 3: Factors associated with under nutrition in elderly people aged ≥65 years Gondar Town, November, 2013

Variable	Under nutrition		COR (95%CI)	AOR(95%CI)
	Yes	No		
Socio-demographic factors				
Education status of respondents				
Un able to read & write	108(65)	331(56)	2.142 (1.311, 3.325)	2.686 (1.472, 5.199)
Read & write	58(35%)	259(44)	1.00	1.00
Wealth index				
Poor	73(44)	221(37.4)	1.644 (1.072, 2.520)	1.783 (1.02,3.18)
Medium	52(31.3)	166(28.1)	1.559 (.986, 2.463)	2.546 (1.371, 4.725)
Rich	41(24.7)	204(34.5)	1.00	1.00
Sex				
Female	141(84.9)	422(71.4)	2.259 (1.424, 3.582)	2.970 (1.631, 5.408)
Male	25(15.1)	169(29.6)	1.00	1.00
Age group				
65-74	30(18.1)	10 (1.7)	33.065(15.207,71.284)	38.141(15.016,96.88)
75-84	90 (54.2)	73 (12.4)	13.405(8.712,20.165)	14.567(8.854,23.966)
≥85	46(27.7)	508 (86)	1.00	1.00
Dietary Factors				
Low DDS	23(13.86)	27(4.6)	3.646 (1.989, 6.683)	3.702(1.797, 7.626)
Middle DDS	61(36.75)	212(35.9)	1.232 (.848, 1.788)	1.064 (.646, 1.753)
High DDS	82(49.4)	351(59.4)	1.00	1.00

5. Discussion

This study showed that the prevalence of under nutrition among elderly people was 21.9%.This finding is low when compared to study done in lake victoria basins of Kenya, Uganda and Tanzania (19).This difference may be due to geographic setting at which the study is done as the later is done both in urban and rural districts.

Females were 2.97 times more likely to be undernourished as compared to males. The prevalence among females was 25% and 12.9% among males. The result of this study is similar with the study done in Malaysia (20) but contradicts with study done in Kenya, machakos district which revealed prevalence in men 32.7% and 24.7% in women (19). The difference in the prevalence of male might be due to the setting difference in the study area as the later is studied in rural district.

Age is found to be associated with under nutrition in elderly population. Oldest old (elderly people with age ≥85) are 38.141 times more likely to be under nourished as compared to young old people (age 65-74) This study is comparable with study done in northern peninsular Malaysia which showed elderly people with the age ≥ 80 years have significantly low BMI as compared to elderly with age below this. At the same time elderly people who are middle old (age 74-84) are 14.567 times more likely to be undernourished as compared to people with age between 65-74 years of age (20).This might be due to the natural ageing process of elderly and the subsequent chronic and acute illnesses occurred in elderly as their age increases.

Educational status was found to be one of the factors which had significant association with under nutrition. Elderly people who cannot read and write were 2.7 times more likely to be undernourished. This finding is comparable with studies done in Iran and Kenya (7, 26) this might be educated people have good feeding practice and have better life style.

With regard to wealth index, Middle income elderly were 2.546 times more likely to be undernourished as compared to rich and poor were 1.783 times more likely to be undernourished. This result is supported by the study done in Russia which states wealthiest individuals have high BMI as compared to poor individuals and at the

same time poor elderly are more likely to be undernourished as compared to wealthier (27).This might be due to wealthiest individuals have enough food to eat and have relatively better life style as compared to poor who are always in trouble to secure their daily food intake.

Dietary diversity score is found to be significantly and positively associated with under nutrition. According to this study, elderly people with poor DDS were 3.702 times more likely to be under nourished when compared to those with high DDS. This result is the same as the study done Kenya, Dadab refugee camp (26) this might be due to the nutritional nature of less diversified foods is lower than high diversified foods.

6. Limitation of the study

- The study focused only on the urban population and might not represent the rural dwellers.
- The study didn’t assess the micronutrient status of the respondents

7. Conclusions

The finding of this study showed that the prevalence of under nutrition among elderly people is high. Being female, increasing age, being poor, having low Dietary diversity score was found to be the risk factors for under nutrition of elderly.

8. Recommendation

Based on The major findings of the study, the following recommendations are forwarded.

To Gondar town health office

- Attention should be given for elderly people as the prevalence of under nutrition is found to be high.
- Nutrition education should be given for elderly people to increase their dietary diversity score.
- Urban health extension professionals should focus on this marginalized age group and periodic malnutrition screening should be done.
- Female elderly should be given great emphasis in nutrition intervention programs

To Researchers

- Prevalence of malnutrition should also be studied to know the magnitude of double burden of malnutrition.

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ANNEXES

Annex I: Structured Questionnaire

University of Gondar College of medicine and health sciences

Institute of public health

Questionnaires to assess the prevalence of under nutrition and associated factors among old age people in Gondar town

Hello!

My name is ----------I am one of the members of the research team. The purpose of this questionnaire is to gather information on prevalence of malnutrition and associated factors among old age people

I have identified you as a study participant hoping that you would be willing to help me by providing some information. I have several questions which I would like to ask you, if you have the time and are willing. The questionnaires include socio-demographic factors and other questions. I will take weight, height and other relevant measurements .All information you provide will be kept confidential. I will not include any identifiers, such as your name or exact address. Only honest answers would contribute to the improvement of health planning, your role in the success of the research is important and I appreciate your contribution to the research. The question may take 30-40 minute to finish. Would this be okay for you?

A. Yes,

B. No

If Respondent agrees to be interviewed,

Starting time_____: End time_____:

001. Code _____

002. kebele Name _____

Date of data collection----------

Name of data collector---------- signature----------

Name of supervisor---------- signature----------

No	Question	Response	skip
1	**Socio demographic**		
101	Age of respondent in years	_____	
102	Sex of respondent	1. Male 2. Female	
103	Weight in K.g	_____	
104	Height in Meter	_____	
105	How many family members do you have?	_____	
106	What is your Marital status?	1. Single 2. Married 3. Divorced 4. Widowed 5. separated	
107	What is your religion?	1. Orthodox 2. Muslim 3. Protestant 99. Others, specify_____	
108	With whom are you living in the house?	1. With my husband 2. With my children 3. Alone 99.Other, specify _____	
109	What is your educational Status?	1. Unable to read and write 2. Read and write 3. Primary education(1-8)	

		4. Secondary and above	
110	What is your source of income?	1. Pension 2. Aid 3. Begging 4. Business (Trade) 99. Others, specify _____	
111	What is your spouse's education level?	1. Unable to read and write 2. Read and write 3. Primary education 4. Secondary education and above	
112	What is your spouse's job?	1. Housewife (for male respondents only) 2. Farmer 3. Merchant 4. no any job 99. Others, specify__	
113	If there is care taker,What is their occupation ?	1. Government employee 2. Farmer 3. Merchant 99. Others specify)_____	

2	**Wealth index measurement**			
201	Does your household have the following?	Yes (1)	Yes (1) No (0)	
	Electricity			
	Radio			
	Television			
	Telephone - landline			
	Telephone - mobile			
	Refrigerator			

202	What type of fuel does your household mainly use for cooking?	1.Electricity 2. Kerosene 3. Charcoal 4. Firewood, straw 5. Dung Other _____	
203	What is the main source of drinking water for members of your household?	1. Piped water 2. Open well 3. Covered well/borehole 4. Spring 5. River/stream Other_____	
204	Where is that water source located?	1. In own dwelling 2. In own compound 3. Elsewhere	
205	How long does it take to go there, get water, and come back?	Minutes..... 99. Don't know	
206	What kind of toilet facility do members of your household usually use?	0. No facility/bush/field 1. Flush toilet 2. Traditional pit toilet 3. Ventilated improved pit (VIP) Latrine Other (specify)_____	
207	Do you share these facilities with other households?	0. No 1. Yes	
208	Main material of the floor **Record observation**	1. Natural floor; earth/sand 2. Dung 3. Finished floor ; cement/bricks Other _____	
209	Main material of the roof **Record observation**	1. Thatch/leaf 2. Corrugated iron 3. Finished roofing	

		Other (specify)_____	
210	How many of the following animals does this household own?	Type of animals	Quantity
		Cows/oxen/bulls	
		Horses/donkeys/mules	
		Goats and Sheep	
		Chickens	
3	**Health factors assessment**		
301	Have you ever been sick for the last 3 months?	1. Yes 2. No	If 2→306
302	Did you visit the health facility then?	1. Yes 2. No	
303	Are you taking any prescribed drugs right now?	1.Yes 2.No	
304	If yes, what was the diagnosis for the drug you are taking?	1. Joint pain 2. HTN 3. Diabetic 4. Hearing problem 5. Vision problem 6. Digestive problem 7. I don't know 99.othersspecify_____	
305	Have you been diagnosed psychological stress or acute disease in the past 3 months	1.Yes 2.No	
306	How is your mobility?	1.Bed or chair bound 2 able to get out of bed/chair but can't go out .3. able to get out of bed/chair and can go out	
4	**Dietary assessment**		

401	How many full meals do you eat daily?	_____meal	
402	How is your meal timing?	1. Regular 2. Irregular 3. I don't know	
403	**Dietary diversity**	**Ask whether the respondents have served with any of the following in the last 24 hours.**	**Yes= 1 No=0**
	CEREALS	corn/maize, rice, wheat, sorghum, millet or any other grains or foods made from these (e.g. bread, noodles, porridge or other grain products) + *insert local foods e.g. ugali, nshima, porridge or pastes or other locally available grains*	
	VITAMIN A RICH VEGETABLES AND TUBERS	pumpkin, carrots, squash, or sweet potatoes that are orange inside + *other locally available vitamin A rich vegetables (e.g. red sweet pepper)*	
	WHITE ROOTS AND TUBERS	white potatoes, white yams, white cassava, or other foods made from roots	
	DARK GREEN LEAFY VEGETABLES	dark green/leafy vegetables, including wild ones + *locally available vitamin A rich leaves such as amaranth, cassava leaves, kale, spinach etc.*	
	OTHER VEGETABLES	other vegetables (e.g. tomato, onion, eggplant), including wild vegetables	
	VITAMIN A RICH FRUITS	ripe mangoes, cantaloupe, apricots (fresh or dried), ripe papaya, dried peaches + *other locally available vitamin A rich fruits*	
	OTHER FRUITS	other fruits, including wild fruits	
	ORGAN MEAT	liver, kidney, heart or other organ meats or blood-based foods	
	FLESH MEATS	beef, pork, lamb, goat, rabbit, wild game, chicken, duck, or other birds	
	EGGS	chicken, duck, guinea fowl or any other egg	

	FISH	fresh or dried fish or shellfish	
	LEGUMES, NUTS AND SEEDS	beans, peas, lentils, nuts, seeds or foods made from these	
	MILK AND MILK PRODUCTS	milk, cheese, yogurt or other milk products	
	OILS AND FATS	oil, fats or butter added to food or used for cooking	
	SWEETS	sugar, honey, sweetened soda, sweetened juice or sugary foods such as chocolates, candies, cookies and cakes	
	SPICES, CONDIMENTS, BEVERAGES	pices (black pepper, salt), condiments (soy sauce, hot sauce), coffee, tea, alcoholic beverages or *local examples*	
404	Has food intake declined over the past three months?	1.Yes 2. No	
405	What is /are the possible reasons for declined food intake? More than one answer is possible	1.loss of appetite 2.Digestive system problems 3. Chewing problem 4. swallowing problem 5.loss of taste and smell	
406	How much fluid do you consume per day?	1.less than 3 cups 2.3 to 5 cups 3.more than 5 cups	
407	Ability of feeding	1.unable to eat without assistance 2.self-fed with some difficulty 3.self-fed without any problem	
408	With whom are you feeding?	1.with family members 2.alone 3. some times with family and sometimes alone	

409	Do you conduct fasting?	1. Yes 2. No	
410	How many seasons of fasting per year?	1. Once 2. Twice 3. Three times 4. > three times	

ቁጥር	ጥያቄ	መልስ	ይለፉ
101	እድሜ	_____	
102	ፆታ	1. ወንድ 2. ሴት	
103	ክብደት በ ኪ.ግ	----------	
104	ቁመት በሜትር	----------	
105	የላይኛው ክንድ ዙሪያ በ ሳ.ሜ		
106	የቤተሰብ ብዛት ስንት ነው?	ድምር በቁጥር_____	
107	የጋብቻ ሁኔታዎ ምንድን ነው?	1. ያላገባ/ች 2. ያገባ/ች/ 3. የፈታ/ች 4. የሞተበ/ባት 5. የተለያየ/ች	2→ 113
108	ሃይማኖትዎ ምንድን ነው?	1. ኦርቶደክስ 2.ሙስሊም 3.ፕሮቴስታንት	

		99. ሌላ ካለ ይጥቀሱ _____	
109	በቤት ውስጥ ከማን ጋር ነው የምትኖሪው/የምትኖረው	1. ከ ባለቤቴ ጋር 2. ከ ልጆቸ ጋር 3. ብቻየን 4. ሌላ ካለ ይገለፅ----------	
110	የትምህርት ደረጃዎ ምንድን ነው;	1. መጻፍ ማንበብ የማይችሉ 2. መጻፍ ማንበብ የሚችሉ 3.የመጀመሪያ ደረጃ ትምህርት(1-8) 4. ሁለተኛ ደረጃና ከዚያ በላይ	
111	የገቢ ምንጭዎ ምንድን ነው ;	1. ጡረታ 2. እርዳታ 3. ልመና 4. ሌላ ካለ ይገለፅ----------	
112	የባለቤትዎ የትምህርት ደረጃ ምንድን ነወ	1. መጻፍ ማንበብ የማይችሉ 2. መጻፍ ማንበብ የሚችሉ 3.የመጀመሪያ ደረጃ ትምህርት(1-8) 4. ሁለተኛ ደረጃና ከዚያ በላይ	
113	የባለቤትዎ ስራ ምንድን ነው ;	1.የቤት እመቤት (ለሴቶች ብቻ) 2.አርሶ አደር 3.ነጋዴ 4. ስራ የለውም/የላትም 5.ሌላ ካለ ይገለፅ----------	

114	የቤተሰቡ አማካይ ወርሃዊ ገቢ ስንት ነው;	_____ብር	
115	ድጋፍና ክብካቤ የሚያደርጉለዎት ሰዎች ካለ ፣ስራቸው ምንድን ነው	1.የመንግስት ሰራተኛ 3. ነጋዴ 2.አርሶአደር 4. ሌላ ካለ ይገለፅ	

2	**የሀብት መጠን መለኪያ**	**አዎ** (1)	**የለም** (2)	
201	በቤት ውስጥ ከሚከተለት ምን ምን አለ? ('√' ምልክት ያድርጉ)			
	ኤሌክትሪክ መብራት			
	ሬድዮ			
	ቴሌቪዥን			
	የቤት ስልክ			
	ሞባይል ስልክ			
	ፍሪጅ			
202	ቤት ውስጥ በአብዛሃኛው ለማብሰል የምትጠቀሙት በምንድን ነው?	1. ኤላክትሪክ 2. ኬሮሲን 3. የእንጨት ከሰሌ 4. የማገዶ እንጨት 5. ኩበት		

		ሌላ ካለ ይገለጽ _____	
203	ቤተሰቡ ውሃ የሚያገኘው ከየት ነው?	1. የቧንቧ ውሃ 2. ያሌተጠበቀ ጉድጓድ ውሃ 3. የተጠበቀ ጉድጓድ ውሃ 4. የምንጭ ውሃ 5. የወንዝ ውሃ ሌላ_____	
204	ውሃው ያለበት ቦታ የት ነው?	1. በቤት ውስጥ 2. በግቢ ውስጥ 3. ውጭ	
205	ውሃ ቀድቶ ለመመለስ ምን ያህሌ ጊዜ ይወስዲል? **በደቂቃ ይመዝግቡ**	ደቂቃ..... 99. አላውቅም	
206	የቤተሰቡ አባላት በአብዛሃኛው መፀዳጃ የሚጠቀመው የት ነው?	1. ሜዳ 2. በውሃ የሚሰራ መፀዲጃ 3. የተለምዶ ጉድጓድ መፀዲጃ 4. ሽታ አልባ መፀዳጃ ሌላ ካለ ይገለጽ_____	
207	መፀዳጃ ቤቱን ጎረቤት ይጠቀምበታል?	0. የለም 1. አዎ	
208	የቤቱ ወለል የተሰራበት **ያዩትን ይመዝግቡ**	1. አፈር/አሸዋ 2. በበት የተሞቀሞቀ 3. በሲሚንቶ የተሞሰነ ሌላ ካለ ገለጸ_____	
209	የቤቱ ጣራ የተሰራበት **ያዩትን ይመዝግቡ**	1. ሳር ክዲን 2. ቆርቆሮ 3. ኮንክሪት ሌላ ካለ ይገለጽ_____	
210	ከሚከተለት እንስሳት ውስጥ በቤት	የእንስሳት ዓይነት | ቁጥር	

	ውስጥ ምን ያህል አለ?	ላምና በሬ		
		ፈረስ፣ አህያና በቅል		
		በግና ፍየሌች		
		ዶሮዎች		
3	**የጤና ሁኔታን በሚመለከት**			
301	ባለፉት 3 ወራት ውስጥ ታመው ነበር?	1. አዎ 2. የለም		
302	መልሱ አዎ ከ ሆነ ለ ህክምና ወደ ጤና ተቁም ሂደዋል ?	1. አዎ 2. የለም		
303	በአሁኑ ወቅት መድሀኒት እየወሰዱ ነው ;	1.አዎ 2.የለም		
304	መድሃኒት እየወሰዱ ከ ሆነ፣ በሽታዎ ምን ነበር	1.የ አጥንት መገጣጠሚያ ህመም 2.የደም ግፊት 3.የስኩር ህመም 4.የ መስማት ችግር 5.የእይታ ችግር 6.የምግብ የመፈጨት እና ሌሎች ተዛማጅ ችግሮች 7.አላውቅም 99.ሌላ ካለ ይገለፅ_____		
305	ባለፉት 3 ወራት ውስጥ የ እምሮ ጭንቀት እና/ወይም ሌሎች አጣዳፊ በሽታዎች እንዳመመወት በሃኪም ተነግሮዎት ያውቃል ;	1.አዎ 2.የለም		
306	የእንቅስቃሴ ሁኔታዎ ምን ይመስላል?	1. ከአልጋየ / ከተሽከርካሪ ወንበሬ ላይ መነሳት አልችልም 2. ከአልጋየ / ከተሽከርካሪ ወንበሬ ላይ መነሳት እችላለሁ ወደ ውጭ መውጣትም እችላለሁ፡፡		

		3. ከአልጋየ / ከተሽከርካሪ ወንበሬ ላይ መነሳት እችላለሁ ነገር ግን ወደ ውጭ መውጣት አልችልም፡፡	
4	**የአመጋገብ ሁኔታ**		
401	በቀን ስንት ጊዜ ይመገባሉ?	_____	
402	የምግብ ሰአትዎ እንዴት ነው?	1 ሁልጊዜ በሰአቱ ነው የምመገበው 2 ሰዓት አልጠብቅም ፤እንደፈለኩ ነው 3 አላውቅም	
ባለፉት 24 ሰአታት ዉስጥ ከ ሚከተሉት የምግብ አይነቶች ውስጥ ቢያንስ አንዱን ተመግበው ከ ሆነ 1ን ካልሆነ ደግሞ 2 ን ይጻፉ፡፡			**አዎ =1 የለም =2**
403	**የምግብ አይነቶች**	**ምሳሌ**	
	ጥራጥሬ	በቆሎ፤ ማሽላ፤ ሩዝ፤ ገብስ፤ስንዴ እና የመሳሰሉት ወይም ከነዚህ የተሰሩ ዳቦ ወይም ገንፎ ወይም ሌላ ሊሆን ይችላል፡፡	
	በቫይታሚን ኤ የበለጸጉ አትክልቶች	ካሮት፤ ስኩረ ድንች፤ በቀይ በርበሬ የተሰራ ወጥ ሊሆን ይችላል፡፡	
	ደብዛዛ ቀለም ያላቸው ቅጠላማ አትክልቶች	የሀበሻ ጎመን...	
	ሌሎች አትክልቶች	ቲማቲም፤ ሽንኩርትና የመሳሰሉት	
	በቫይታሚን ኤ የበለፀጉ ፍራፍሬዎች	የበሰለ ፓፓያ፤ የበሰለ ማንጎ	
	ስጋ	የከብት ጉበት፤ ኩላሊት፤ልብ ፤ ጥብስ፤ ዶሮ ዎጥ፤ ቀይ ዎጥ እና ሌሎች የ ስጋ ዘሮች	

	እንቁላል	የዶሮ እንቁላል	
	አሳ	የአሳ ዝርያወች	
	በቆልቶች እና የ ለውዝ ዘሮች	ባቄላ፣ አተር፣ ለውዝ ፣ ከነዘህ የተሰሩ ማንኛውም አይነት ምግብ	
	ወተት እና የወተት ተዋፅኦዎች	ወተት፣አይብ፣እርጎ	
	ቅባት እና ፈሳማ	በዘይት፣በቅቤ፣ በፈሳማ የተሰሩ የምግብ አይነቶች	
	ጣፋጭ ነገሮች	ስኩር፣ ማር፣ጁስ፣ቸኮሌት፣ከረሜላ፣ኬክ እና የመሳሰሉት	
	የመጠጥ አይነቶች	ሻይ፣ ቡና፣ ጠላ፣ቢራ እና ሌሎች	
	በትናንትናው ዕለት ከቤትዎ ውጭ ምግብ ተመግበዋል ?		
405	ባለፉት 3 ወራት ውስጥ የምግብ አወሳሰድዎ ቀንሳል?	1.አዎ 2. አልቀነሰም	2→407
406	መልሱ አዎ ከ ሆነ ምክንያቱ ምን ነበር? ከአንድ መልስ በላይ ይቻላል	1.የምግብ ፍላጎት መቀነስ 2.የምግብ አለመፈጨት እና ሌሎች ተዛማጅ ችግሮች 3. የማላመጥ ችግር 4. የመዋጥ ችግር 5.የማሽተትና የማጣጣም ችግር ስላለብኝ	
407	በቀን ምን ያህል ፈሳሽ ይወስዳሉ?	1.ከ3 ኩባያ በታች 2. ከ3 እስከ 5 ኩባያ 3.ከ 5 ኩባያ በላይ	
408	እንዴት ነው የሚመገቡት ?	1.ራሴን ችየ መመገብ አልችልም 2.ምንም እንኩ ትንሽ ቢያስቸግረኝም ራሴን ችየ እመገባለሁ 3.ያለምንም ችግር ራሴን ችየ መመገብ እችላለሁ	
409	ከማን ጋር ነው የሚመገቡት?	1.ከቤተቡ አባላት ጋር	

		2.ብቻየን 3. አንዳንዴ ከቤተሰብ ጋር ፡ አንዳንዴ ደግሞ ብቻየን	
410	ትዎሚያልሽ/ህ?	1.አዎ 2.አልዎምም	
411	መልሱ አዎ ከሆነ በ አመት ውስጥ ስንት ጊዜ ትዎማለህ/ትዎሚያለሽ?	5. አንድ ጊዜ 6. ሁለት ጊዜ 7. ሶስት ጊዜ 8. ከ ሶስት ጊዜ በላይ	

Annex II. Information Sheet and Consent Form

Title of the Research Project

Prevalence of Malnutrition and associated factors among old age people in Gondar town,North west ethiopia ,2013

Name of Principal Investigator: Dawit Tessfamichael

Name of the Organization: University of Gondar, Gondar College of Medicine and Health Sciences, Institute of Public Health.

Name of the Sponsor: University of Gondar

Information sheet and consent form Prepared prior to the study for persons who participate in this Research Project.

Introduction

This information sheet and consent form is prepared with the aim of determining the magnitude of Malnutrition and associated factors among old aged people. The research group includes the principal investigator and two advisors from University of Gondar.

Purpose of the Research Project

The aim this study is to determine the magnitude of malnutrition and associated factors among elderly people. As this age group is the most neglected age group, assessing factors which lead this age group to malnutrition will give an insight for the community in general and policy makers in particular. The results of this study will be used to design appropriate intervention programs to address factors associated with malnutrition.

Procedure

The study elderly people aged 65 years and above in Gondar town. You are selected to be one of the study participants if you are willing to take part in this study and we

kindly invite you to take part in our project. If you are willing to participate, we are so happy and we need you to clearly understand the aim of this study and show your agreement. We will measure your height and weight. Finally you are kindly requested to give your genuine response in the interview.

Benefits, Risk and /or Discomfort

By participating in this research project you may feel some discomfort in taking your time (a maximum of 30-40 minute). However, your participation is definitely important to assess extent of malnutrition utilization and identify factors associated with it. There is no risk or direct benefit in participating in this research project.

Incentives/Payments for Participating

You will not be provided any incentives or payment to take part in this project.

Confidentiality

The information collected from you will be kept confidential and stored in a file, without your name by assigning a code number to it. And hence no report of the study ever identifies you.

Right to Refusal or Withdraw

You have the full right to refuse from participating in this research. You have also the full right to withdraw from this study at any time you wish.

Person to contact

This research project will be reviewed and approved by the ethical committee of the University of Gondar. If you have any question you can contact the following individual and you may ask at any time.

Name: 1. Dawit Tessfamichael Tele: +251 923 22 03 14

E-mail:dtessfamichael@yahoo.com

1. Mrs Azieb Atnafu (BSc,MPH) Tele: +251 918 77 45 66
2. Mr Molla Mesele(BSc, MSc) Tele: +251 920 25 46 64

የመረጃ መስጫና ስምምነት መጠየቂያ ቅጽ

በጎንደር ከተማ ለሚገኙ እድሜአቸው 65 አመት እና ከዛ በላይ በሆኑ ሰዎች ላይ ያተኮረ የስርዓተ ምግብ አለመመጣጠን እና ተዛማጅ ጉዳዮችን ለማወቅ ለ ሚደረገው ጥናት የመረጃ መስጫ እና ለስምምነት መግለጫ የተዘጋጀ ቅጽ፡፡

የዋና ተመራማሪው ስም፡ ዳዊት ተስፋሚካኤል

የድርጅቱ ስም: ጎንደር ዩኒቨርሲቲ ህክምናና ጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ኢንስቲትዩት

ወጪውን የሚሸፍነው፡ በግል

መግቢያ: ይህ የመረጃና የስምምነት ውል ቅፅ የተዘጋጀው እርስዎ ተሳታፊ እንዲሆኑ በተጋበዙበት በምርምር ቡድኑ የሚካሄደውን ጥናት አላማ በተመለከተ መግለጫ ለመስጠት ነው፡፡ የምርምር ፕሮጀክቱ ዋና ዓላማ በጎንደር ከተማ ለሚገኙ እድሜአቸው 65 አመት እና ከዛ በላይ በሆኑ ሰዎች ላይ ያተኮረ የስርዓተ ምግብ አለመመጣጠን እና ተዛማጅ ጉዳዮችን ለማወቅ ነው፡፡ ይህ መረጃ ደግሞ ለተለያዩ ሀላፊዎች ትክክለኛ የሆነ መረጃ በመስጠት ለችግሩ መፍትሄ ለመፈለግ እና እቅድ ለማዉጣት ያገለግላቸዋል፡፡

ከ 65 አመት በላይ በሆናቸው ሰወች ላይ የሰርዓተ ምግብ እጥረት መጠን እና ሌሎች ተዛማጅ ጉዳዮች በመጠይቅና ቁመት እና ክብደትን በመለካት መረጃዎችን ለመሰብሰብ ነው፡፡ ይህ ጥናት ከ 65 አመት በላይ በሆናቸው ሰወች ላይ የሰርዓተ ምግብ እጥረት መጠን ላይ ያሉ ችግሮችን በመለየትና ለሚመለከታቸው አካላት በማሳወቅ እና ይህን ችግር ለመከላከል በጥናቱ እንዲሳተፉ እንጋብዝዎታለን፡፡የጥናቱ ውጤት በዚህ ዙሪያ ያለውን ችግር ለማሻሻል እና ለመቀነስ የሚያግዝ ነው፡፡

የአሰራር ሂደት

የዚህ ጥናት አላማ በጎንደር ከተማ ከ 65 አመት በላይ በሆናቸው ሰወች ላይ የሰርዓተ ምግብ አለመመጣጠን መጠን እና ሌሎች ተዛማጅ ጉዳዮች በመጠይቅና ቁመት እና ክብደትን በመለካት መረጃዎችን ለመሰብሰብ ነው፡፡ በዚህ ጥናት ዉስጥ ለመሳተፍ ከተስማሙ ስምምነቱን መረዳትና ፈቀደኝነትዎን ማሳዎቅ ይገባዎታል፡፡ ከዚህ በኋላ መረጃ ሰብሳቢዉ መጠይቅ ላይ ያሉትን ጥያቄዎች ይጠይቀዎታል፡፡ ስምዎን መፃፍና መፈረም አያስፈልግዎትም፡፡ የሚሰጡት መረጃ ሚስጥራዊነቱ ይጠበቃል፡፡

አደጋዎች ወይም አለመመቻቸት

በዚህ ጥናት በመሳተፍዎ የተወሰነ ያለመመቸት ስሜት ሊሰማዎት ይችላል በተለይ የስራ ጊዜዎትን ቢበዛ ከ 30-40 ደቂቃ ያህል ይሻማዎታል፡፡ ነገር ግን ጥናቱ ከሚሰጠዉ ጥቅም አኳያ እንደሚሳተፉ ተስፋ አደርጋለሁ፡፡

ጠቀሜታ

በዚህ ጥናት ላይ በመሳተፍዎ ቀጥተኛ የሆነ ጥቅም ላያገኙ ይችላሉ ነገር ግን እርስዎ በተመለከተው አላማና ይዘት መሳተፍ በአመጋገብ አለመመጣጠን ችግር ዙሪያ ለሚደረጉ መፍትሄዎች ያግዛል፡፡ በዚህ ጥናት መሳተፍ የሚያደርሰው ጉዳት የለም፡፡

የተሳትፎ ክፍያዎች፡

በጥናቱ በመካፈልዎ የሚሰጥ ክፍያ የለም፡፡

ሚስጥር ስለመጠበቅ፤

ለዚህ ጥናት የሚሰበሰብ መረጃ በሚስጥር ይጠበቃል፡፡ የሚሰበሰበዉ መጠይቅ የእርስዎ ለመሆኑ መለያ አይኖረዉም፡፡ መረጃዉ በዋና ተመራማሪዉ ፋይል ተደርጎ የሚቀመጥ በመሆኑ ሌላ ሰዉ ሊያገኘዉ አይችልም፡፡

በጥናቱ ያለመሳተፍ ወይም ራስን ከጥናቱ የማግለል መብት፡

በጥናቱ ላለመሳተፍ ከፈለጉ በዚህ ጥናት ያለመሳተፍ ሙሉ መብት አለዎት፡፡ ከመጠይቁ ዉስጥ ጥቂት ጥያቄዎችን ወይም በሙሉ ያለመመለስ ይችላሉ፡፡

የሚመለከታቸው ሰዎች፡

ስለዚህ ጥናት ማነጋገር ከፈለጉ ከሚከተሉት የፈለጉትን ማነጋገር ይችላሉ፡፡

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Annex lll. Assurance of investigator

The undersigned agree to accept responsibility for the scientific, ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the research and publications office of the University of Gondar.

Student's Name: Dawit Tessfamichael

Signature: _____ Date_____

Approval of the advisors:

Advisors

	Name	signature	Date
1.	Mrs Azeb Atenafu (BSc, MPH)	_____	_____
2.	Mr Molla Mesele (BSc, MSc)	_____	_____